REMARKS/ARGUMENTS

Reconsideration of the application, as herein amended, is respectfully requested.

Status of Claims

Claims 1, 2 and 4-27 are pending in the application, with claim 1 being the only independent claim and claims 4-13 and 20-22 being withdrawn from consideration. Claims 1 and 14 have been amended. Dependent claim 27 has been added. Support for claim 27 can be found in paragraph [0039] of the published specification.

Overview of the Office Action

Claims 1, 2, 14-19, 23 and 26 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,001,183 (*Gurary*).

Alternatively, claims 1, 2, 14-19, 23 and 26 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Gurary*.

Claims 1, 2, 14-19, 23 and 26 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Gurary* in view of U.S. Patent No. 6,494,955 (*Lei*).

Claims 24 and 25 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Gurary* in view of U.S. Patent No. 6,063,203 (*Satoh*).

Summary of Subject Matter Disclosed in the Specification

The following descriptive details are based on the specification. They are provided only for the convenience of the Examiner as part of the discussion presented herein, and are not intended to argue limitations which are unclaimed.

The present specification discloses a substrate holder 1 for a facility for epitaxial deposition of semiconductor material on a substrate 2. The substrate holder 1 includes a substrate supporting face, a holder rear face, which faces away from the substrate supporting face, and a temperature equalization structure which results in a defined temperature profile over the entire substrate surface of the substrate 2. The substrate 2 is located on or in the vicinity of the substrate holder 1 during the epitaxial deposition. *See* Figs. 8A and 8B; and paragraphs [0010] and [0044] to [0045] of the published specification.

The temperature equalization structure comprises a stepped relief which is formed on the substrate supporting face of the substrate holder 1, and comprises at least four steps. *See* Figs. 8A and 8B; and paragraphs [0019] and [0044] to [0045] of the published specification.

Allowability of the Claims

Independent Claim 1

35 U.S.C. 102(b) Rejection:

Amended claim 1 now recites the following:

> "wherein said temperature equalization structure comprises a stepped relief which is formed on said substrate supporting face of the substrate holder, and comprises at least four steps" (emphasis added).

Applicants respectfully submit that amended claim 1 is not anticipated by *Gurary* because *Gurary* does not disclose, either expressly or inherently, each and every element set

forth in claim 1. In particular, *Gurary* fails to disclose the above-quoted limitations of amended claim 1.

On page 4 of the Final Rejection, the Examiner states:

> "Applicant argues that in Gurary the steps are disclosed on the side opposite to the substrate supporting face and not on the substrate supporting face.
>
> This is not found persuasive since one of ordinary skill in the art would understand that the teaching 'that a curved surface could be substituted by a stepped surface" could be applied in any orientation. Moreover a surface with large continuous steps as mentioned in the specification approaches a curved surface in a broad sense especially if the steps are small as mentioned in the specification."

Applicants respectfully disagree.

Gurary relates to a wafer carrier. More specifically, the wafer carrier 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300 of *Gurary* is intended to be used with a conventional susceptor 110 in an epitaxial growth process. *See* Figs. 1-16 and col. 1, lines 9-15 of *Gurary*.

Fourteen embodiments are disclosed in *Gurary* (*see* col. 4, line 24 to col. 5, line 45 of *Gurary*), and *Gurary* deliberately and systematically discusses these embodiments in detail <u>one by one</u> (*see* col. 5, line 54 to col. 15, line 14 of *Gurary*). *Gurary* does not broadly state that a curved surface of a wafer carrier can be replaced by a stepped surface. Rather, *Gurary* specifically mentions this replacement possibility in the detailed description of only <u>one</u> of the fourteen embodiments (i.e., the wafer carrier 1200 shown in Fig. 15 (*see* col. 13, lines 20-22, 58-60 of *Gurary*)). In other words, *Gurary* discloses this replacement possibility only when discussing the wafer carrier 1200 shown in Fig. 15.

However, as clearly shown in Fig. 15 of *Gurary*, the smoothly curved surface of the wafer carrier 1200 is on the <u>bottom surface</u> 1244 of the depending member 1242. Thus, the stepped relief of *Gurary* suggested by the Examiner would be on <u>the bottom surface</u> 1244 of the

depending member 1242 of the wafer carrier 1200. However, this bottom surface 1244 faces away from a wafer 140 and the wafer supporting face of the wafer carrier 1200. Therefore, *Gurary* fails to disclose a stepped relief which is formed on a substrate supporting face of a substrate holder.

In sharp contrast, amended claim 1 of the present application specifically recites the limitations "the temperature equalization structure comprises a stepped relief which is formed on the substrate supporting face of the substrate holder" (emphasis added).

In addition, *Gurary* merely mentions that the curved bottom surface of the wafer carrier 1200 shown in Fig. 15 can be replaced by a stepped surface. *Gurary* does not specifically disclose how many steps should be employed in such a stepped surface. Therefore, *Gurary* fails to disclose a stepped relief comprising at least four steps, as now expressly recited in amended claim 1.

In view of these differences, withdrawal of the 35 U.S.C. 102(b) rejection of claim 1 is respectfully requested.

35 U.S.C. 103(a) Rejection as Unpatentable over Gurary:

As discussed above, *Gurary* mentions that a curved bottom surface of a wafer carrier can be replaced by a stepped surface only when discussing the wafer carrier 1200 shown in Fig. 15. As clearly shown in Fig. 15, however, the wafer carrier 1200 has a flat wafer supporting face for the wafer 140. Many factors, such as how the wafer 140 is supported on the wafer carrier 1200 and the total area of the wafer supporting face of the wafer carrier 1200 that comes in contact with the wafer 140 during operation, would affect the temperature profile of the wafer 140. Needless to say, merely adding a stepped relief comprising at least four steps on the flat wafer supporting face of the wafer carrier 1200 of *Gurary* would alter or destroy the already

established, substantially even temperature profile over the entire wafer surface of the wafer 140 and, therefore, render the wafer carrier 1200 inoperative for its intended purposes. Therefore, contrary to the Examiner's interpretation, a person with ordinary skill in the art would not be motivated by *Gurary* to modify or replace the flat wafer supporting face of the wafer carrier 1200 of *Gurary* with a stepped relief comprising at least four steps.

In view of the foregoing, withdrawal of the 35 U.S.C. 103(b) rejection of claim 1 as being unpatentable over *Gurary* is respectfully requested.

35 U.S.C. 103(a) Rejection as Unpatentable over Gurary in view of Lei:

Applicants respectfully submit that amended claim 1 is patentable over *Gurary* in view of *Lei* because the combination of *Gurary* and *Lei* fails to teach or suggest all of the limitations of amended claim 1. In particular, the combination of *Gurary* and *Lei* fails to teach or suggest a stepped relief which is on a substrate supporting face of a substrate holder and comprises at least four steps, as expressly recited in amended claim 1.

As discussed above, *Gurary* fails to teach or suggest a stepped relief which is on a substrate supporting face of a substrate holder and comprises at least four steps, as expressly recited in amended claim 1.

Lei does not supply what is missing from *Gurary*.

Lei relates to a substrate support assembly 138 which has a substrate support 202 and a stem 204. The substrate support 202 includes a first or upper plate 208 and a second or lower plate 210. The upper plate 208 supports a substrate 140 during processing. More specifically, the upper plate 208 includes a support surface 216 having a seal ring 218 which is used to support the substrate 140, and a stepped surface 220 which is disposed radially inside the seal ring 218. *See* Fig. 2A and col. 3, lines 38-63 of *Lei*.

However, according to *Lei*, the stepped surface 220 includes a center portion 222, an intermediate portion 224 and an outer portion 226 (*see* Fig. 2A and col. 3, lines 63-66 of *Lei*). In other words, the stepped surface 220 of *Lei* has two steps only. Therefore, *Lei* fails to disclose or teach a stepped relief comprising at least four steps, as expressly recited in amended claim 1 of the present application.

Moreover, in *Lei*, a plurality of posts 228A, 228B and 228C are disposed on the stepped surface 220, and are used to support the substrate 140 and to attain a better temperature uniformity over the substrate surface of the substrate 140. *See* Fig. 2A and col. 4, lines 9-33 of *Lei*. In other words, *Lei* explicitly teaches using these posts 228A, 228B and 228C to generate a desired, substantially even temperature profile over the entire substrate surface of the substrate 140. In view of this specific teaching of *Lei*, a person with ordinary skill in the art would not be motivated to further modify the stepped surface 220 by adding two or more steps. Therefore, *Lei* fails to suggest a stepped relief comprising at least four steps, as expressly recited in amended claim 1 of the present application.

The fact that something can be done is an insufficient basis to obviate an invention. Absent a motivation, the references can be modified and/or combined in the way proposed in the Final Rejection only with impermissible hindsight based on the presently claimed invention.

In view of the foregoing, withdrawal of the 35 U.S.C. 103(b) rejection of claim 1 as being unpatentable over *Gurary* in view of *Lei* is respectfully requested.

Dependent Claims 2, 14-19 and 23-27

Claims 2, 14-19 and 23-27 depend, either directly or indirectly, from independent claim 1 and, thus, each is deemed allowable therewith.

In addition, these claims include features which serve to still further distinguish the claimed invention over the prior art of record.

In particular, it is noted that neither *Gurary* nor *Lei* teaches or suggests the limitations "wherein the substrate holder is essentially composed of solid silicon carbide material" of claim 27 because the wafer carrier of *Gurary* is formed by molybdenum, graphite or silicon carbide-coated graphite (*see* col. 5, line 65 to col. 6, line 1 of *Gurary*) and the upper plate 208 of *Lei* is formed by aluminum nitride (*see* col. 3, lines 53 and 54 of *Lei*).

Conclusion

Based on all of the above, it is respectfully submitted that the present application is now in proper condition for allowance. Prompt and favorable action to this effect, and early passing of this application to issue, are respectfully solicited.

Should the Examiner have any comments, questions, suggestions or objections, he is respectfully requested to telephone the undersigned in order to facilitate early resolution of any outstanding issues.

Respectfully submitted,

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By _____

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